C2 answers

9. 13.3%

10. 8.7%

11. Compare: the thickness increases with age in all three areas.

Contrast: the slope had the most increase in thickness after 28 years. Both the dunes and the plains were much less thick.

12 The accumulation rate of N was much higher on the plains and the slope than on the dunes.

13 All three areas had increases in biomass

15 The plains. Any logical answer would be accepted:

●● the wind causes plants to grow that have less aerial biomass and more roots

●● the wind causes dehydration so that the roots must be deep to get water from the sand

●● wave action during storms washes away plants that do not have deep roots.

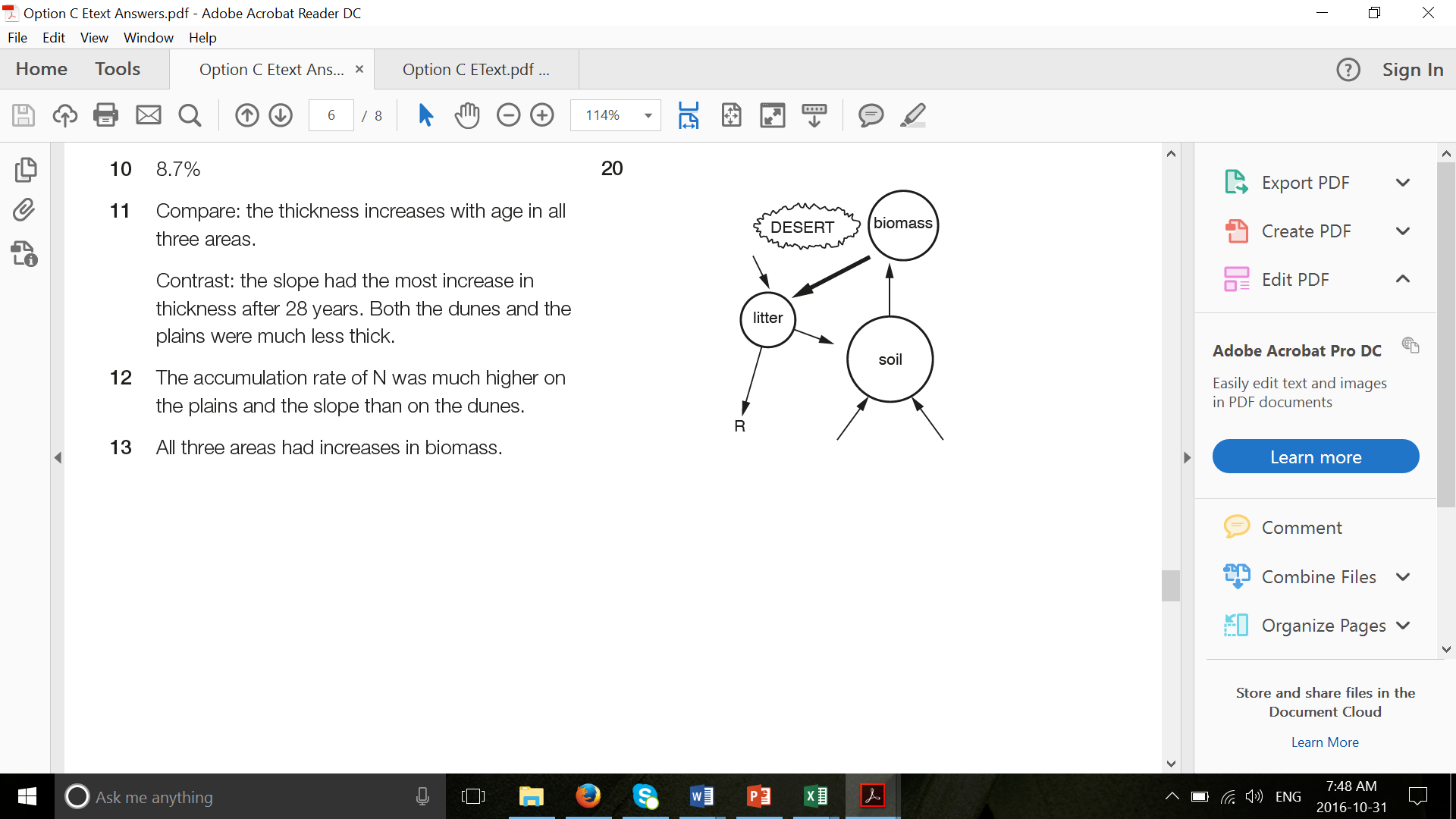
16 10–30°C.

17 100 cm yr–1

18 Grasslands is 6°C; tropical forest is 25°C.

19 Compare: Temperate deciduous and temperate rainforests have a very similar average temperature of about 15°C.

Contrast: Precipitation is only an average of 150 cm annually for the temperate deciduous but is 250 cm annually for the temperate rainforest.



EXERCISES

4 One way of describing energy flows and nutrient recycling is to look at Gersmehl diagrams of different biomes. These diagrams are a common method of demonstrating the cycling of nutrients within the main ‘stores’ of an ecosystem. Arrows of varying thickness represent nutrient transfer. Circles of varying size represent the size of the stores.

5 Closed systems exchange energy but not matter. No natural system on Earth is considered to be closed, but the entire planet can be considered ’almost‘ closed. Large amounts of light energy enter the Earth and eventually return to space as heat, but matter is not exchanged.

6 Compare: Both energy pyramids have a similar shape. Both energy pyramids typically show greater efficiency levels as you move up the pyramid. Contrast: The numbers of trophic levels are different.